TM100N03YS

N-Channel Enhancement Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

General Features

V_{DS} = 30V I_D =100A

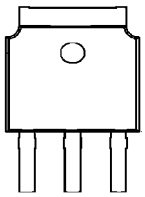
$R_{DS(ON)}$=3.5mΩ(typ) @V_{GS}=10V

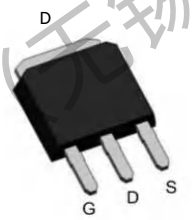
100% UIS Tested

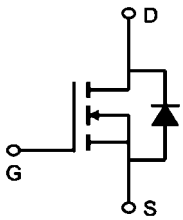
100% R_g Tested

Green Product

YS:TO-251S-3L







Marking: 100N03

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	100	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	60	A
I_{DM}	Pulsed Drain Current[2]	250	A
P_D@T_A=25℃	Total Power Dissipation[3]	3.6	W
P_D@T_C=25℃	Total Power Dissipation[3]	52	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction Case[1]	---	6.6	℃/W

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Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =24V, V_{GS}=0V	-	-	1	μA
		Tj=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_{DS}=250μA	0.9	1.2	1.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=20A	-	3.5	5.5	mΩ
		V_{GS}=4.5V, I_{DS}=15A	-	5.5	6.8	
Body Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD}=40A, V_{GS}=0V	-	0.7	1.3	V
Dynamic Characteristics[e]						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS} =10V, Frequency=1.0MHz	-	1356	-	pF
C_{oss}	Output Capacitance		-	55	-	
C_{rss}	Reverse transfer capacitance		-	45	-	
$t_{d(ON)}$	Turn-on delay Time	V_{GS}=10V ,V_{DS}=15V R_G=1.8Ω, I_D=20A， R_L=30Ω	-	8	-	nS
t_r	Turn-on rise Time		-	9	-	
$t_{d(OFF)}$	Turn-off delay Time		-	32	-	
t_f	Turn-off rise Time		-	6	-	
Gate Charge Characteristics[e]						
Q_g	Total Gate Charge	V_{DS} =15V, V_{GS}=10V, I_{DS}=20A	-	23	-	
Q_{gs}	Gate-Source Charge		-	5	-	
Q_{gd}	Gate-Drain Charge		-	3	-	

Note: 1. Pulse test: pulse width<=300uS, duty cycle<=2%

2.Static parameters are based on package level with recommended wire bonding

Typical Performance Characteristics

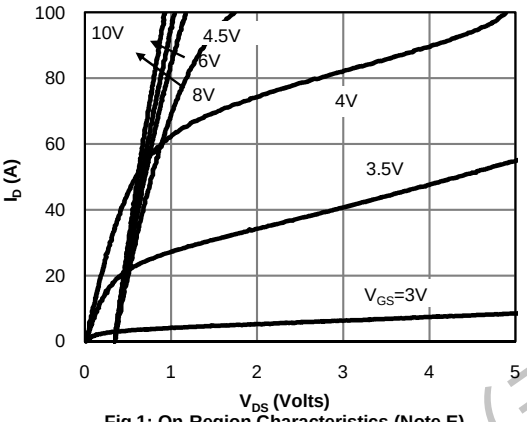

Fig 1: On-Region Characteristics (Note E)

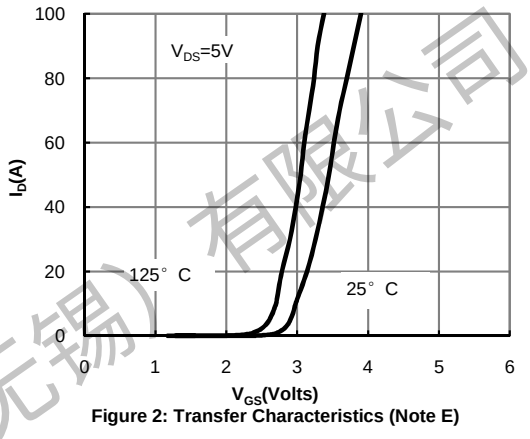

Figure 2: Transfer Characteristics (Note E)

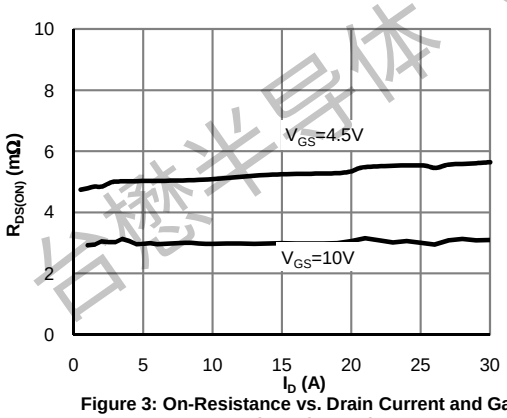

Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

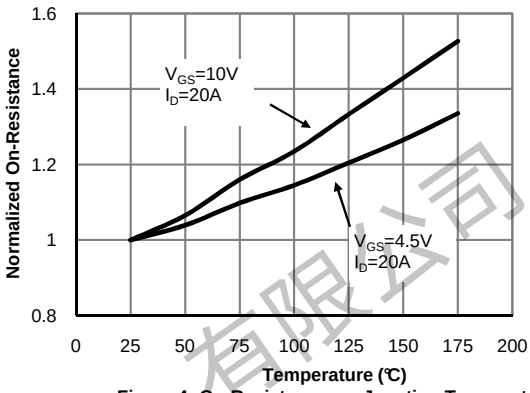

Figure 4: On-Resistance vs. Junction Temperature (Note E)

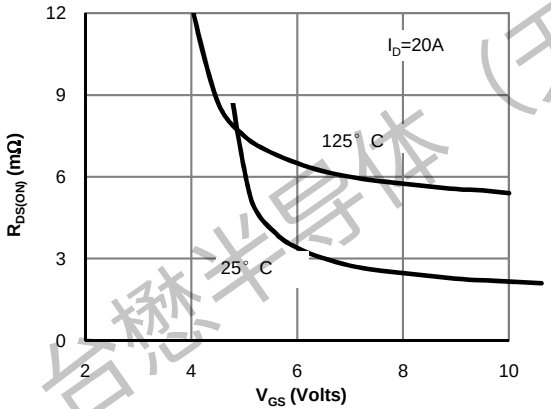

Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

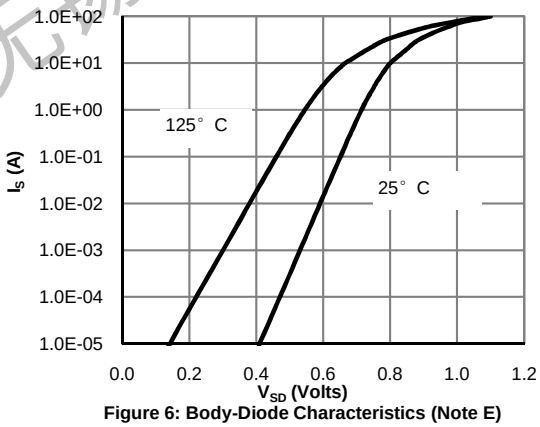

Figure 6: Body-Diode Characteristics (Note E)

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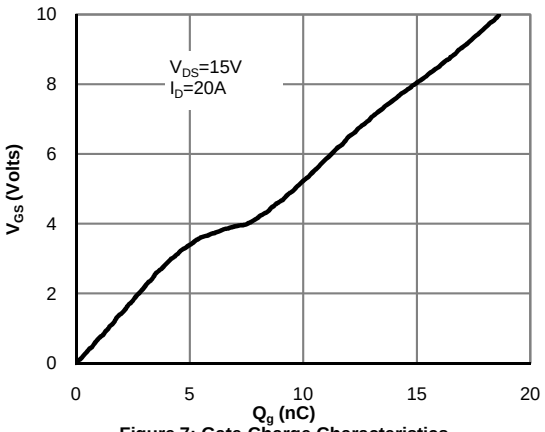


Figure 7: Gate-Charge Characteristics

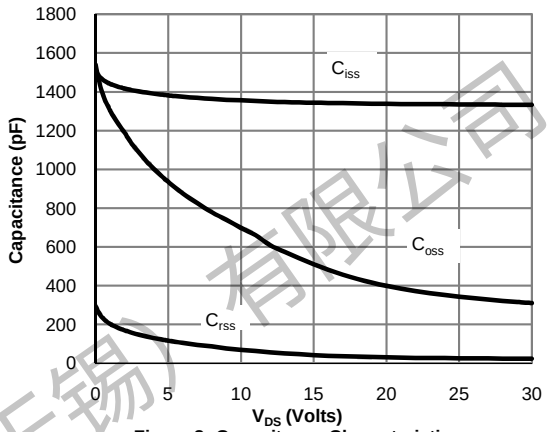


Figure 8: Capacitance Characteristics

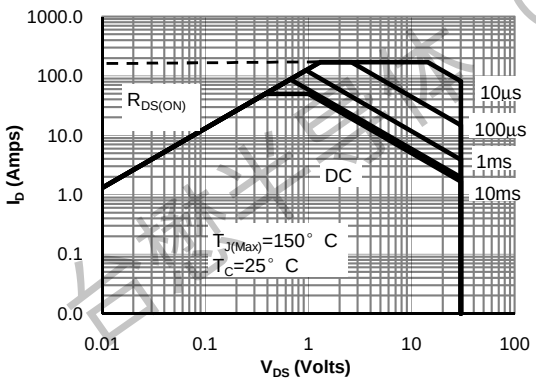


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

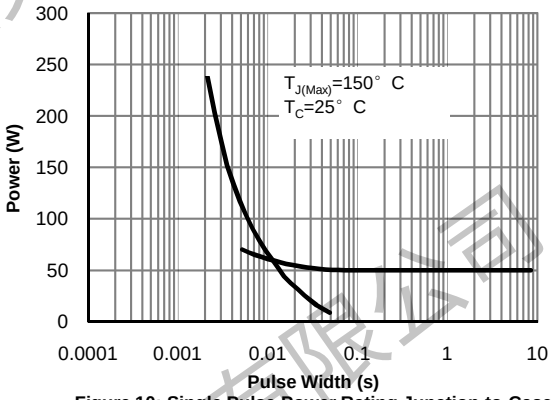


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

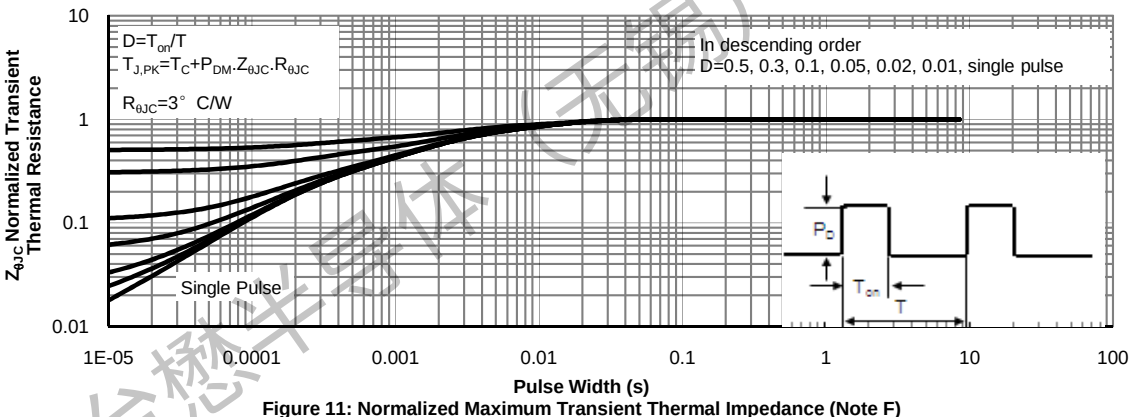
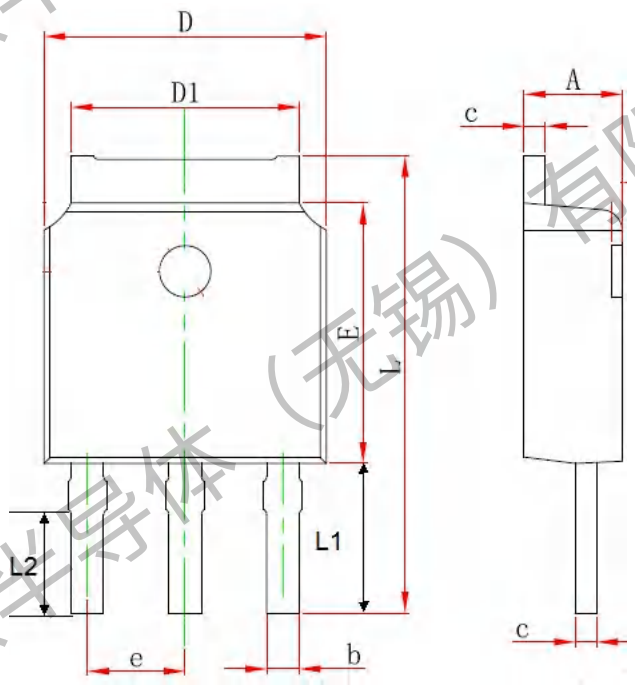


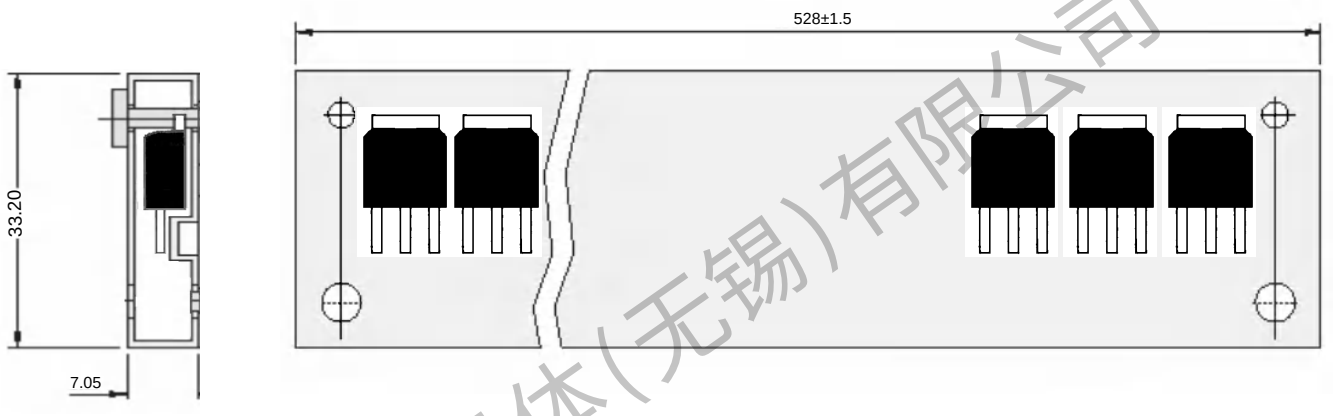
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

Package Mechanical Data:TO-251S-3L

UNIT：mm

SYMBOL	min	nom	max
A	2.20		2.40
b	0.50		0.85
C	0.45	0.50	0.60
D	6.50		6.70
D1	5.10		5.50
E	5.9		6.20
e	2.18	2.29	2.38
L	11.00		12.40
L1	3.9		4.2
L2	2.7		3.0



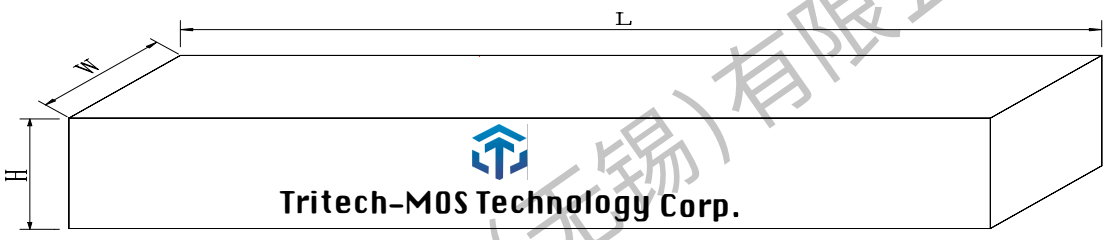


All Dimensions are in mm

1.TO-251S-3L Packaging

Package	Packing Form	Quantity		
		Tube	Inner Box	Outbox
TO-251S-3L	Tube Tape	80 Or 75	5 Or 6	1

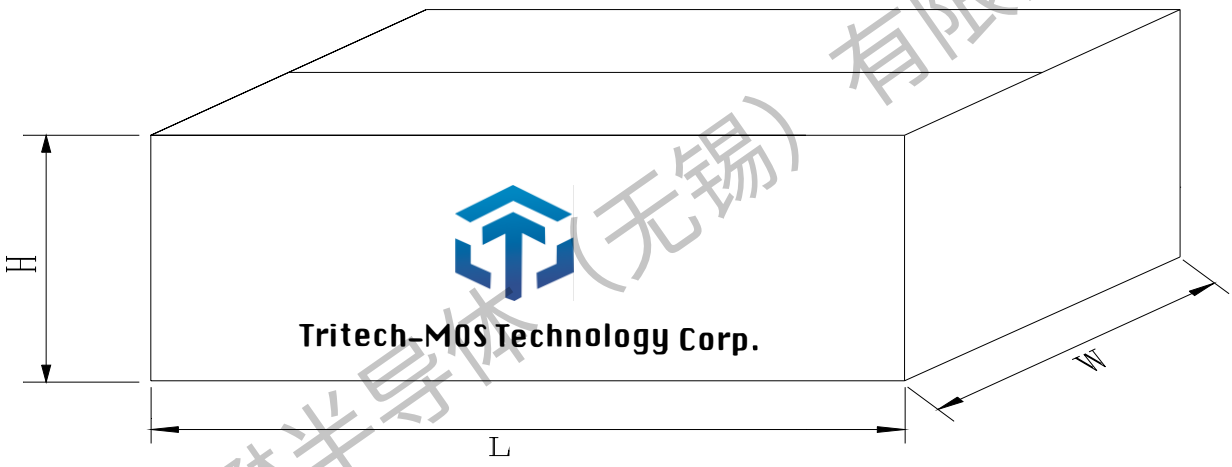
Inner Box



Dimension : 580 (L)×154(W) ×49(H) mm

Quantity : 80 × 50Ea = 4000pcs Or 75 × 56Ea = 4200pcs

Outer Box



Dimension : 595(L)×285(W) ×185(H) mm

Quantity : 4000 × 6Ea = 24000pcs Or 4200 × 5Ea = 21000pcs

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Revision history:

Date	Rev	Description	Page
2023.07.21	23.07	Original	